

What Is Claimed Is:

1. A transflective liquid crystal display device, comprising:

a thin film transistor disposed at a corner of a pixel region, the thin film transistor including a gate electrode, a semiconductor layer, a source electrode, and a drain electrode;

a reflector disposed in the pixel region and spaced apart from the thin film transistor, the reflector formed of the same material as one of the gate, source, and drain electrodes;

a color filter disposed within the pixel region, the color filter having one of red, green, and blue colors;

a black matrix over the thin film transistor along color filter borders of adjacent pixel regions; and

a pixel electrode formed of a transparent conductive material adjacent to the color filter, the pixel electrode having a first end portion contacting the drain electrode of the thin film transistor;

wherein the pixel region is divided into a reflective portion including the reflector and a transmissive portion absent of the reflector.

2. The device according to claim 1, wherein the reflector is formed of the same material as the gate electrode, and is formed at the same time of forming the gate electrode.
3. The device according to claim 2, wherein the reflector and the gate electrode have double-layered structures including a second layer on a first layer, and the second layer of the reflector is partially removed to expose an underlying portion of the first layer of the reflector.
4. The device according to claim 3, wherein the first layer includes aluminum and the second layer includes molybdenum.
5. The device according to claim 1, wherein the reflector is formed of the same material as the source and drain electrodes, and is formed at the same time when forming the source and drain electrodes.
6. The device according to claim 5, wherein each of the source electrode, the drain electrode, and the reflector include triple-layered structures that comprise:
  - a first layer;
  - a second layer on the first layer; and
  - a third layer on the second layer;

wherein the third layer of the reflector is partially eliminated to expose an underlying portion of the second layer.

7. The device according to claim 6, wherein the first layer includes molybdenum, the second layer includes aluminum, and the third layer includes molybdenum.

8. The device according to claim 1, wherein the transmissive portion surrounds the reflective portion.

9. The device according to claim 8, wherein the transmissive and reflective portions have a rectangular shape, and diagonal lines of the transmissive portion directly correspond to diagonal lines of the reflective portion.

10. The device according to claim 8, wherein the transmissive and reflective portions have a rectangular shape and diagonal lines of the transmissive portion are directly perpendicular to diagonal lines of the reflective portion.

11. The device according to claim 8, wherein the reflective portion has a hexagonal shape and is disposed in a central part of the transmissive portion.

12. The device according to claim 8, wherein the reflective portion has an octagonal shape and is disposed in a central part of the transmissive portion.

13. The device according to claim 1, wherein the reflective portion has a rectangular shape and is disposed at one corner of the transmissive portion, and two sides of the reflective portion correspond and contact to two sides of the transmissive portion.

14. The device according to claim 1, wherein the reflective portion has a rectangular shape and is disposed at one side of the transmissive portion, and one side of the reflective portion corresponds and contacts one side of the transmissive portion.

15. The device according to claim 1, wherein the reflective portion has a right-angled triangular shape and is surrounded by the transmissive portion.

16. The device according to claim 1, wherein the reflective portion has a right-angled triangular shape, and one side of the reflective portion contacts one side of the transmissive portion and a second side and hypotenuse of the reflective portion border the transmissive portion.

17. The device according to claim 1, wherein the reflective portion has a right-angled triangular shape, and two sides of the reflective portion correspond and contact two sides of the transmissive portion so that hypotenuse of the reflective portion borders on the transmissive portion.

18. The device according to claim 1, wherein the reflective portion has an isosceles triangular shape, and a bottom side of the reflective portion corresponds and contacts one side of the transmissive portion so that two equal sides of the reflective portion border on the transmissive portion.

19. The device according to claim 1, further comprising a passivation layer between the black matrix and the color filter.

20. The device according to claim 1, wherein the pixel electrode includes a first transparent pixel electrode and a second transparent pixel electrode, the first transparent pixel electrode is disposed between the black matrix and the color filter and contacts the drain electrode, and the second transparent pixel electrode is on the pixel electrode to contact the first transparent pixel electrode.

21. The device according to claim 1, further comprising a passivation layer covering both the thin film transistor and the reflector.

22. A transflective liquid crystal display device, comprising:

- a substrate;

- a gate electrode disposed in a thin film transistor region on the substrate;

- a first buffer pattern disposed in a pixel region on the substrate and spaced apart from the gate electrode;

- a gate insulation layer formed on the substrate to cover the gate electrode and the first buffer pattern;

- a semiconductor layer on the gate insulation layer over the gate electrode;

- a second buffer pattern formed of the same material as the semiconductor layer and formed during the same time as formation of semiconductor layer, the second buffer pattern disposed above the first buffer pattern in the pixel region;

- source and drain electrodes formed on the semiconductor layer and space apart from each other;

- a reflector on the second buffer pattern, the reflector formed of the same material as the source and drain electrodes;

- a color filter disposed within the pixel region and having one of red, green, and blue colors;

- a black matrix formed above a thin film transistor in the thin film transistor region, the thin film transistor includes the gate electrode, the semiconductor layer, and the source and drain electrodes, the black matrix covering the thin film transistor

except for a portion of the drain electrode and bordering adjacent color filters of neighboring pixel regions; and

a pixel electrode disposed in the pixel region and formed of a transparent conductive material, the pixel electrode adjacent to the color filter and having a first end portion contacting the drain electrode of the thin film transistor;

wherein the pixel region is divided into a reflective portion that includes the reflector and a transmissive portion that is absent of the reflector, the color filter has a first thickness in the transmissive portion and a second thickness in the reflective portion, and the first thickness is larger than the second thickness.

23. The device according to claim 22, further comprising a passivation layer between the black matrix and the color filter, wherein the passivation layer has an opening that exposes a portion of the drain electrode.

24. The device according to claim 22, wherein the pixel electrode includes a first transparent pixel electrode and a second transparent pixel electrode, the first transparent pixel electrode is disposed between the black matrix and the color filter and contacts the drain electrode, and the second transparent pixel electrode is on the pixel electrode to contact the first transparent pixel electrode.

25. The device according to claim 22, further comprising a passivation layer covering both the thin film transistor and the reflector.

26. A transflective liquid crystal display device, comprising:

- a substrate;

- a gate electrode disposed in a thin film transistor region on the substrate;

- a first buffer pattern disposed in a pixel region on the substrate and spaced apart from the gate electrode;

- a gate insulation layer formed on the substrate to cover the gate electrode and the first buffer pattern;

- a semiconductor layer on the gate insulation layer over the gate electrode;

- a second buffer pattern disposed above the first buffer pattern in the pixel region and formed of the same material as the semiconductor layer and formed during the same time as the semiconductor layer;

- source and drain electrodes formed on the semiconductor layer, the source and drain electrodes have the same planar shape with the semiconductor layer except for a space between the source and drain electrodes;

- a reflector on the second buffer pattern, the reflector is formed of the same material as the source and drain electrodes and has the same planar shape as the second buffer pattern;



a color filter disposed within the pixel region, and having one of red, green, and blue colors;

a black matrix formed above a thin film transistor in the thin film transistor region, the thin film transistor includes the gate electrode, the semiconductor layer, and the source and drain electrodes, the black matrix covering the thin film transistor except for a portion of the drain electrode and borders adjacent color filters of the neighboring pixel regions;

a passivation layer covering the thin film transistor and the reflector, the passivation layer exposing an edge portion of the drain electrode; and

a pixel electrode disposed in the pixel region and formed of a transparent conductive material, the pixel electrode adjacent to the color filter and contacting the edge portion of the drain electrode of the thin film transistor,

wherein the pixel region is divided into a reflective portion having the reflector and a transmissive portion absent of the reflector, the color filter has a first thickness in the transmissive portion and a second thickness in the reflective portion, and the first thickness is larger than the second thickness.

27. The device according to claim 26, further comprising an additional passivation layer between the black matrix and the color filter, the additional passivation layer has an opening that exposes the edge portion of the drain electrode and the substrate in the transmissive portion.

28. The device according to claim 26, wherein the pixel electrode includes a first transparent pixel electrode and a second transparent pixel electrode, the first transparent pixel electrode is disposed between the black matrix and the color filter and contacts the drain electrode, and the second transparent pixel electrode is on the pixel electrode to contact the first transparent pixel electrode.

29. A transflective liquid crystal display device, comprising:

a substrate;

a gate electrode disposed in a thin film transistor region on the substrate;

a first buffer pattern disposed in a pixel region on the substrate and spaced apart from the gate electrode;

a gate insulation layer formed on the substrate to cover the gate electrode and the first buffer pattern;

a semiconductor layer on the gate insulation layer over the gate electrode;

a second buffer pattern formed of the same material as the semiconductor layer and formed at the same time as the semiconductor layer, the second buffer pattern disposed above the first buffer pattern in the pixel region;

source and drain electrodes formed on the semiconductor layer and space apart from each other, the source and drain electrodes have the same planar shape with the semiconductor layer except for a space between the source and drain electrodes;

a reflector on the second buffer pattern, the reflector is formed of the same material as the source and drain electrodes and has the same planar shape as the second buffer pattern;

a thin film transistor disposed in the thin film transistor region, the thin film transistor including the gate electrode, the semiconductor layer, and the source and drain electrodes;

a passivation layer covering the thin film transistor and the reflector, the passivation layer exposing an edge portion of the drain electrode; and

a color filter disposed over an entire surface of the substrate on the passivation layer, the color filter having one of red, green, and blue colors and having a drain contact hole exposing the edge portion of the drain electrode; and

a pixel electrode formed of a transparent conductive material and disposed over the color filter in the pixel region, the pixel electrode contacting the edge portion of the drain electrode through the drain contact hole,

wherein the pixel region is divided into a reflective portion having the reflector and a transmissive portion absent of the reflector, the color filter has a first thickness in the transmissive portion and a second thickness in the reflective portion, and the first thickness is larger than the second thickness.

30. The device according to claim 29, further comprising a black matrix above the thin film transistor filter between the color filters of neighboring pixel regions.

31. The device according to claim 29, further comprising a black matrix above the pixel electrode covering the thin film transistor.

32. The device according to claim 29, further comprising a planarization layer between the color filter, the pixel electrode, and a black matrix on the planarization layer, the planarization layer has a contact hole corresponding to the drain contact hole, and the black matrix overlaps the thin film transistor.

33. The device according to claim 29, further comprising a black matrix above the thin film transistor filter between the adjacent color filters of neighboring pixel regions, and a planarization layer covering both the black matrix and the color filter.

34. A method of fabricating a transflective liquid crystal display device, comprising:

forming a gate electrode and a first buffer pattern on a substrate using a first mask process;

forming a gate insulation layer on the substrate to cover the gate electrode and the first buffer pattern;

forming a pure amorphous silicon layer, a doped amorphous silicon layer, and a metal layer in sequence on the gate insulation layer;

patterning the pure amorphous silicon layer, the doped amorphous silicon layer, and the metal layer simultaneously using a second mask process to form a semiconductor layer over the gate electrode, source and drain electrodes on the semiconductor layer, a second buffer pattern over the first buffer pattern, and a reflector on the second buffer pattern;

forming a first passivation layer on the gate insulation layer to cover the source and drain electrodes and the reflector;

forming a black matrix on the first passivation layer to cover the gate electrode, the source electrode, and the drain electrode except for an edge portion of the drain electrode;

forming a second passivation layer on the first passivation layer to cover the black matrix;

patterning the first and second passivation layers and the gate insulation layer to form an opening that exposes the edge portion of the drain electrode and portions of the substrate;

forming a first transparent conductive layer over an entire surface of the substrate, the first transparent conductive layer contacting the exposed edge portion of the drain electrode and the exposed portion of the substrate;

forming a color filter on the first transparent conductive layer in a pixel region to cover the reflector, the color filter having one of red, green, and blue colors;

forming a second transparent conductive layer on the color filter and on an exposed portion of the first transparent conductive layer;

patterning the first and second transparent conductive layers simultaneously to form first and second transparent pixel electrodes between where the color filter is interposed.

35. The method according to claim 34, wherein the second mask process uses a half tone mask having a half light transmitting portion.

36. The method according to claim 34, wherein the gate electrode, the semiconductor layer, and the source and drain electrodes constitute a thin film transistor.

37. The method according to claim 34, wherein the source and drain electrodes have the same planar shape as the semiconductor layer except for a space between the source and drain electrodes.

38. The method according to claim 34, wherein the reflector has the same planar shape as the second buffer pattern.

39. The method according to claim 34, wherein a first area where the reflector is disposed defines a reflective portion and a second area where the first transparent pixel electrode contacts the substrate defines a transmissive portion.

40. The method according to claim 39, wherein the color filter has a first thickness in the transmissive portion and a second thickness in a reflective portion, and the first thickness is larger than the first thickness.